

**DRAFT**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR THE PROPOSED TEN MILE RIM COAL**  
**LEASE-BY-APPLICATION AND ASSOCIATED RIGHTS-OF-WAY,**  
**SWEETWATER COUNTY, WYOMING**

**WY-040-EA04-060**

**As Applied for by Bridger Coal Company**  
**(Federal Coal Lease Application WYW-154595)**

Prepared for

**Bureau of Land Management**  
**Rock Springs Field Office**  
**Rock Springs, Wyoming**

In Cooperation with

**Office of Surface Mining Reclamation and**  
**Enforcement/Western Regional Coordinating Center**  
**Denver, Colorado**

*This Environmental Assessment was prepared by TRC Mariah Associates Inc., an environmental consulting firm, with guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Title 40 Code of Federal Regulations, Part 1506(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.*

**February 2004**

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## EXECUTIVE SUMMARY

On September 28, 2001, Bridger Coal Company (BCC) filed an application with the Bureau of Land Management (BLM) for federal coal reserves located adjacent to the existing Jim Bridger Mine in north-central Sweetwater County, Wyoming. On February 11, 2003, BCC filed a modified application with the BLM at the Wyoming State Office in Cheyenne for a reduced lease area. This application was made pursuant to provisions of the lease-by-application (LBA) regulations found in Title 43 *Code of Federal Regulation* (C.F.R.) 3425.1. The tract applied for, known as the Ten Mile Rim Tract (TMRT), contains federal-, state-, and private-owned coal reserves. The BLM assigned the federal lease area case number WYW-154595. In addition to the federal LBA action, the project would also require BLM to issue a right-of-way (ROW) associated with the LBA for a portion of a new powerline required for the project. The ROW applications would be made pursuant to Title 43 C.F.R., Part 2800, that govern the federal approval and issuance of ROW applications.

The TMRT area and the associated ROW would be located north of Interstate 80, approximately 10 mi north of Point of Rocks, approximately 25 mi east of Rock Springs, and approximately 70 mi west of Rawlins, Wyoming. The TMRT area is located in the area administered by the BLM Rock Springs Field Office.

BCC proposes to lease federal coal for a new underground mine located adjacent to the existing Jim Bridger Mine, a surface coal mine operation. According to LBA documents submitted by BCC, the coal would be required to provide fuel to the nearby Jim Bridger Power Plant for an additional 15 to 20 years. The surface ownership pattern within the TMRT area is checkerboard, where even-numbered sections are owned by the federal government, odd-numbered sections are privately owned, and select even-numbered sections are owned by the State of Wyoming. The Jim Bridger Mine has an approved mine and reclamation plan and permit (No. 338-T5) issued by the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) and other pertinent permits and approvals issued by other federal, state, and local regulatory agencies. As part of the federal coal-leasing process, BLM will evaluate the tract configuration and may add or subtract federal coal to avoid bypassing federal coal or to otherwise achieve

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maximum economic recovery. BLM will also evaluate the application to define the characteristics of the federal coal reserves and to evaluate the fair market value of the tract. No vertical shafts or inclines would be required to access the coal reserves. According to BCC, underground access to the coal reserves within the TMRT area would be gained through access from the existing highwall area at Ramp 14 of the existing surface mine. Under the Proposed Action, no new mine facilities (such as ventilation shafts or support equipment) would be required within the TMRT area. Associated mine support facilities (e.g., buildings, roads, overland conveyor, powerlines, etc.) would be located on lands that the applicant currently has legal access rights to or where legal access would be secured.

In addition, the Proposed Action would include the approval of one associated ROW for a segment of a new powerline. This associated facility would be located outside of and near to the TMRT, and this ROW would be necessary for implementation of the Proposed Action. The *Federal Land Policy and Management Act of 1976* (FLPMA), as amended (43 *United States Code* [U.S.C.] §1701 et seq.), and promulgating regulations found in Title 43 C.F.R., Part 2800, govern the federal approval and issuance of ROW applications for facilities such as the proposed powerline.

Before the federal government may hold a competitive coal lease sale or issue the associated ROW grant, the BLM must analyze the potential environmental impacts of issuing a lease or ROW grant in accordance with the *National Environmental Policy Act* (NEPA). To assess potential impacts of the Proposed Action, BLM conducted internal BLM and public scoping. Public scoping was initiated on November 15, 2001, and concluded on December 31, 2001. Based on public and BLM internal scoping comments, BLM has decided to prepare an environmental assessment (EA) for the Proposed Action. BLM also determined that no additional public scoping was necessary or required as a result of the applicant's 2003 revised application and reduction in the size of the TMRT LBA area. This EA is prepared pursuant to NEPA, as amended (42 U.S.C. 4321 et seq.), its implementing regulations found in Title 40 C.F.R. Part 1500–1508, BLM's *National Environmental Policy Act Handbook* (H-1790-1) (BLM 1988), BLM's desktop reference *Overview of BLM's NEPA Process* (BLM 1996a), and

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*Considering Cumulative Impacts Under the National Environmental Policy Act* (Council on Environmental Quality [CEQ] 1997).

This EA assesses the environmental impacts of the Proposed Action and the No Action Alternative. The Proposed Action is strictly defined as the leasing of the federal coal reserves located within the TMRT and the granting of one ROW for a segment of powerline (required for the Proposed Action) that would cross federal lands. This EA assesses the potential environmental impacts of these actions on federal lands but also includes the potential environmental impacts associated with the construction and mining activities that would occur on private- and state-owned lands. While some of these associated activities would occur on privately owned lands, they are described as connected actions under NEPA regulations and analyzed in this EA.

The Proposed Action would comply with all relevant federal, state, and local laws and regulations. In addition, the Proposed Action would be operated in accordance with federal Mine Safety and Health Administration (MSHA) and Wyoming Department of Employment, Division of Mine Inspections and Safety rules and regulations.

Several alternatives were identified and reviewed during the preparation of this EA. However, at the conclusion of the review, the EA team screened out all of the alternatives, except for the No Action Alternative, as not feasible and not warranting further analysis in this EA. The Proposed Action and the No Action Alternative are analyzed in detail in this draft EA.

### **Proposed Action**

Under the Proposed Action, coal on federal lands within the TMRT would be offered for lease at a competitive sale, subject to standard BLM coal lease stipulations. An estimated 44 million tons of in-place coal reserves exist within the federal lands in the TMRT area, and an estimated 121.5 million tons of in-place coal reserves exist within the entire TMRT area (including federal, state, and private mineral rights) that would be mined over an approximate 15- to 20-year period. Because the TMRT is located within an area of checkerboard coal ownership (a pattern of

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alternating sections of federal, state, and private mineral rights), the use of federal land is needed for optimal mine development. Under the Proposed Action, all coal within the TMRT would be mined utilizing underground longwall mining technologies, and a minimal amount of surface-disturbing activities would occur. A majority of the additional surface-disturbing activities for mine-related facilities (i.e., surface support facilities, powerline, overland conveyor, and access road) would occur within areas that have already been disturbed within the existing Jim Bridger Mine lease and mine permit area. An exception would be for a separate electric powerline required for underground mining equipment and surface support facilities. These areas are discussed in more detail later in this chapter.

Underground mining operations would begin at the highwall near Ramp 14 where continuous mining machines would be utilized to establish the main entry and working room for longwall mining equipment. Once adequate panel development has taken place, underground longwall mining equipment would be assembled and put into service. Under the Proposed Action, longwall mining would account for a majority of the coal mined from the TMRT. Estimated production from the underground mine could range from 4.5 to 5.5 million tons per year at full production for the next 15-20 years. Once the coal is mined, it would be loaded onto an electric conveyor system and transported directly to the Jim Bridger Power Plant, located approximately 4-5 mi south of the TMRT.

### **No Action Alternative**

Under the No Action Alternative, the TMRT coal lease application would be rejected and the area contained in the application would not be offered for competitive coal sale at this time. However, rejection of the application would not affect the already leased and permitted surface mining activity at the Jim Bridger Mine. For the purpose of this analysis, the No Action Alternative assumes that the TMRT would not be mined in the immediate future. This assumption is highly speculative since private minerals within the project area may be developed without the development of the federal minerals. However, this approach is not preferred by the applicant, has not been discussed with the BLM, and would not be utilized as the No Action Alternative. The purpose of the No Action Alternative is to allow a comparison of the economic

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and environmental consequences of mining these lands versus not mining them. Not leasing this land in a configuration associated with the existing Jim Bridger surface coal mine at this time may result in a bypass of federal coal, which may not be in the general public's best financial interest. However, selection of the No Action Alternative would not preclude the possibility of subsequent leasing of these lands as a stand-alone underground mine as described in Section 2.3.1.

Under the No Action Alternative, the Proposed Action would not be selected and BLM would not offer the federal coal within the TMRT lease area for sale. As a result, BCC's ability to sustain historic coal production levels would be limited to the remaining coal reserves located within the existing lease area that would be economically recoverable using existing surface mining operations and highwall mining methods. Undoubtedly, there would be a decrease in the amount of coal mined at the Jim Bridger Coal Mine with a corresponding reduction in the number of miners employed at BCC. BCC would continue to produce coal at some reduced level as long as the costs were competitive with market alternatives for the Jim Bridger Power Plant. BCC has not completed a detailed analysis of the No Action Alternative mining scenario and does not have specific information on how long surface mining operations could continue or how many workers would be required for on-going mining and reclamation operations under the No Action Alternative.

In addition, representatives for the adjacent Jim Bridger Power Plant would need to secure alternative coal supplies from non-BCC sources for the power plant. These coal supplies would likely be transported by rail to the plant on the existing railroad spur line from Union Pacific Railroad Company's main line located near Point of Rocks, Wyoming.

### **Direct and Indirect Impacts**

BLM resource specialists have determined that six of the 13 critical elements of the human environment are not present in the area, are not affected by the Proposed Action or alternatives of this EA, and are not discussed further. Seven critical elements (air quality; cultural resources; Native American religious concerns; TEC&P species; wastes [hazardous and solid]; water

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quality; and wetlands/riparian areas) are present in the proposed project area, may be affected by the Proposed Action or alternatives, and are discussed in detail in this EA.

Based on comments received from the public during a BLM-sponsored open house for the Proposed Action on January 17, 2002, and additional existing information concerning the proposed project area, BLM resource specialists have determined that this EA will also analyze potential impacts of the Proposed Action and alternatives on geology and geologic hazards, minerals (solid and fluid), health and safety (transportation), land resources and use, noise, rangeland and livestock grazing, recreation, socioeconomics, soil resources, special status flora and fauna, vegetation, wild horses, and wildlife. Other resources (e.g., forested area/products, paleontology, visual resources, water rights, etc.) have been determined not to be affected by the proposed project and are therefore not analyzed in detail in this EA.

Based on the discussion presented above and in accordance with BLM NEPA regulations and policies, the following resource area/topics will be addressed in this EA: air quality and noise; cultural resources; geology and geologic hazards; health and safety (transportation); land resources and use; minerals (solid and fluid); Native American religious concerns; rangeland and livestock grazing; recreation; socioeconomics; soil resources; TEC&P and BLM-sensitive species; vegetation (including invasive species); wastes (hazardous and solid); water resources; wetlands/riparian areas; wild horses; and wildlife.

Air pollutant emissions would occur from construction of the mine facilities and from selected mine and reclamation operations associated with the Proposed Action. Air emissions and air pollutant impacts are limited by state and federal regulations, standards, and implementation plans established under the *Clean Air Act* and are administered within Wyoming by WDEQ/AQD. Chapter 6 of the WAQS&R requires all proposed air pollutant emission sources, including coal mining operations, to undergo a permitting review and, if necessary, to obtain a construction permit prior to construction or operation of the source. Chapter 3 of the WAQS&R specifies general emissions standards for new and existing sources, and Chapter 2 of the WAQS&R addresses ambient air quality standards. Additional state or federal programs may apply, to a proposed source, if certain emissions and other thresholds are met or exceeded. One

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such program is the PSD permit program (also administered by WDEQ/AQD) that requires major sources to perform additional analyses, including Best Available Control Technology and Air Quality-Related Values analyses for federal Class I Areas. The Proposed Action, in combination with existing Jim Bridger Mine operations, would be classified as a minor source and therefore would not be subject to the PSD permit program. The Proposed Action would be subject to WDEQ/AQD construction and operating permit requirements and would be required to operate in compliance with emission standards and ambient air quality standards. Based on the discussion presented in the EA, no violations of applicable federal or state air quality regulations would occur.

Under the Proposed Action, human-related noise would increase above existing background levels; however, a majority of the mining activities would occur between 200 and 1,000 ft below the ground level and therefore would not be audible to the casual observer located within the TMRT. The highest level of noise associated with the Proposed Action would likely occur at or near the mine portal and surface support facility at Ramp 14. In addition, ongoing surface mining and reclamation operations, and the accompanying noise, would continue at the Jim Bridger Mine. As a result, noise from the Proposed Action would likely be less than surface mining operations and would not be distinguishable from the existing level of background noise in the area. In addition, there are no residences, schools, or noise-sensitive human receptors within the TMRT or the CIAA. The nearest residence to the TMRT would be more than 8 mi west in the town of Superior. It is unlikely that underground mining operations would be audible or would adversely affect residents in Superior.

Under the Proposed Action, 59 acres within the TMRT may be physically disturbed as a result of the repair of surface cracks due to subsidence. An additional 28 acres located away from the TMRT area would be disturbed due to the construction of associated support facilities (e.g., overland conveyor system, powerline, access road). In order to protect and mitigate potential impacts to NRHP-eligible sites (including the Point of Rocks to South Pass wagon road) within the TMRT area, BCC would enter into a cultural resource programmatic agreement with BLM, OSM, WDEQ/LQD, and Wyoming State Historic Preservation Office. This agreement would identify specific survey, testing, protection, and mitigation measures that would be implemented

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by BCC to address and protect NRHP-eligible historic and prehistoric sites within the TMRT area. The programmatic agreement would demonstrate compliance with all applicable cultural resource laws and regulations.

Under the Proposed Action, BLM Class III surveys would be conducted on those areas that are located outside of the TMRT, have not been previously surveyed, and would be physically disturbed by the construction activities. All historic and prehistoric resources that are potentially eligible for the NHRP that could be adversely affected by the Proposed Action would be protected from disturbance or would be appropriately mitigated if the site could not be avoided. Where necessary and appropriate, site-specific mitigation measures would be developed and implemented in accordance with the current cultural resource protection plan contained in BCC's approved WDEQ/LQD permit. The site-specific mitigation measures would also be developed and implemented with the concurrence of the BLM, OSM, WDEQ/LDQ, and the Wyoming State Historic Preservation Office.

The primary impact of the Proposed Action on geology would be the removal of approximately 44 million tons of in-place federal coal reserves included in the total of approximately 121.5 million tons of in-place federal, private, and state coal reserves from the TMRT area.

Under the Proposed Action, there would be a slight lowering of elevation within a majority of the TMRT. The amount of subsidence that reaches the surface depends on such factors as time, depth of mining, thickness of the coalbed extracted, thickness and strength of the overlying rock, and any previous mining of overlying coalbeds (U.S. Department of Energy 1995). BCC anticipates that 85% of the mined-out coal area may eventually be evident at the surface by a slight lowering (6.0-9.5 ft) of elevation. Based on the experience from other underground operations being conducted by PacifiCorp (BCC is a subsidiary of PacifiCorp), BCC expects that it would take approximately 3-4 weeks for subsidence caused by the longwall mining of the TMRT to initially reach the surface. In addition, BCC expects subsidence activities to be substantially complete within 2 years of the completion of mining operations at any particular location.

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Material overlying the mains would generally remain intact at the original elevation, while the remaining mined longwall panel areas would settle. The surface would gradually settle over the longwall coal panel area following the completion of mining operations. While the area located above the longwall coal panels would subside, the settling would cause little or no surface disturbance (e.g., surface cracks, channel displacement, etc.) that would require corrective action (i.e., reclamation and revegetation) by BCC. This assessment is based on other longwall mining operations conducted in Wyoming. Therefore, for the purpose of this EA, it will be assumed that 1% (or 59 acres) of the surface area within the TMRT would be impacted over the LOM to a point that would require corrective action (i.e., repair and revegetation of surface cracks). If the project area were completely flat, the final topographic surface would be composed of ridges and basins. However, combined with the natural undulations of the topographic surface, the subsidence within the TMRT would generally not be noticeable to the casual observer.

Local surface water drainage patterns within the TMRT could be disrupted by subsidence. Therefore, besides the 59 acres of estimated subsidence that would need to be reclaimed, BCC would be responsible for repairing and revegetating any drainage channel affected by subsidence-related disturbance within the TMRT in accordance with WDEQ/LQD rules and regulations.

There may be slightly increased soil erosion due to subsidence. Soil loss would occur primarily due to wind and water erosion. Wind and water erosion would eventually reduce the relief due to the subsidence. Soils would be locally affected if cracks develop at the surface. BCC would be responsible for repairing and revegetation any area affected by subsidence-related disturbance within the TMRT in accordance with WDEQ/LQD rules and regulations.

Vegetation would not be directly disturbed unless subsidence cracks form; however, BCC would repair and revegetate any area affected by subsidence-related disturbances within the TMRT in accordance with WDEQ/LQD rules and regulations. Indirect impacts would occur because the new topography would alter local soil moisture regimes, which may eventually affect species distribution within the TMRT. The new topography may also alter snow distribution and thus

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moisture accumulation patterns, which may eventually cause gradual permanent changes to vegetation communities.

Under the Proposed Action, approximately 10-75 temporary construction workers would be employed from approximately mid-2005 through the end of 2007, and an additional 50 miners may eventually be employed at the Jim Bridger Mine. Both temporary and full-time employees would travel to the mine site either in individual vehicles, vans, or buses. As a result, the number of individual vehicles, vans, and buses would not greatly increase from the existing numbers of vehicles that currently utilize Interstate 80 or Wyoming State Highway 377. It also follows that there would not be a large increase in the number of traffic accidents on both roads.

In addition, construction and new miners would travel on access roads controlled and maintained by BCC, and drivers would be required to comply with posted speed limits. The public would not have access to the working portions of the mine and these access roads. The existing mine access roads would be maintained according to appropriate transportation standards in order to handle the estimated 180 to 250 miners that would eventually work at and travel to the proposed underground mine. The actual number of vehicles that would utilize these roads at any one time cannot be accurately estimated but would be based on the average number of workers per vehicle and the number of employees that would be working in any specific work shift (the mine would generally be operated 24 hours per day 7 days per week).

Under the Proposed Action, landownership and mineral ownership would not change. Other current land uses within the TMRT (i.e., livestock grazing, wildlife habitat, and dispersed recreation) would continue at their current levels, unaltered and unaffected by the Proposed Action. However, current land uses in the approximate 28 acres that would be disturbed by the proposed construction of the mine facilities (e.g., overland conveyor, powerline, etc.) would be temporarily unavailable for livestock grazing, wildlife habitat, and/or recreational use. However, once mining operations have been completed, facilities removed, and the disturbed area reclaimed, previous land uses would be available.

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There are no known producing oil, gas, or coalbed methane wells or fields within the TMRT or the CIAA, and the potential for near-term mineral development, besides coal, within the TMRT is moderate to low (BLM 1997a, 2003b). Coalbed methane testing conducted by BCC within the TMRT area indicates that there is no evidence of economic reserves of coalbed methane in any of the four holes that were drilled by BCC (BLM 2003b; PacifiCorp 2003). Given the lack of existing coalbed methane development within the TMRT and the lack of any proven reserves from the Deadman coal zone or even the CIAA, it is not possible to estimate the loss of any potential coalbed methane reserves that may potentially be present with the LBA area.

In addition, there are no active locatable mineral (e.g., precious metals, bentonite, etc.) mines or economically recoverable deposits of locatable minerals within the TMRT or the CIAA, and there are no claims for locatable minerals within the TMRT or CIAA (BLM 1996b). There are also no construction aggregate quarries (a saleable mineral) within the TMRT or the CIAA; however, the BLM has identified several sand and gravel deposits along the western boundary of the CIAA (BLM 1996b). Due to the limited size and remoteness of these deposits outside of the TMRT area, it is unlikely that these deposits would be developed in the near-term and therefore would be unaffected by the Proposed Action.

Exploration, including seismic testing, for and development of oil, gas, coalbed methane, locatable minerals, and salable minerals may continue to be permitted by the BLM within the TMRT in accordance with applicable regulations and as long as exploration would not interfere with ongoing coal mine development and operations.

No sites of Native American religious concern are known to occur within the TMRT; if such sites or localities are identified at a later date, they would be taken into consideration by the BLM and would be addressed in accordance with applicable rules, regulations, and policies.

Approximately 5 AUMs may potentially be temporarily displaced by reclamation operations associated with the repair of the surface cracks due to subsidence. This would account for less than 0.006% of the utilized AUMs within the Rock Springs grazing allotment. This displacement would be short-term (i.e., less than 10-20 years after reclamation operations have

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been completed) and would be mitigated by timely implementation of reclamation operations. Reclamation and revegetation operations would be conducted in accordance with and approved by WDEQ/LQD. There would be no permanent displacement of livestock as a result of the Proposed Action. Noise from the underground mining operation would be minimal, and noise from the mine portal and surface support facilities would be similar to the existing noise being generated at the Jim Bridger Mine; therefore, there would be no displacement of livestock from the project area due to increased noise.

Under the Proposed Action, recreation opportunities within the TMRT would be discouraged but would not be restricted. Hunting and other dispersed recreational activities that currently occur within the TMRT project area would likely continue and would not be altered or impacted by the Proposed Action.

The Continental Divide dissects the TMRT LBA area; however, no segments or routes of the CDNST have been designated by the BLM along the southern branch around the Great Divide hydrologic drainage basin.

It is likely that most of the specialized temporary construction workers would come from outside of the Sweetwater County area. However, with underground longwall-type mining operations currently being conducted at the trona mines located west of Green River, it is possible that some of the additional miners may be hired from within the existing workforce.

Projected revenue to the State of Wyoming is estimated at \$93.5 million from mining the entire TMRT area, of which \$33.9 million would be generated from mining of the federal coal, based on \$1.10 per ton of coal sold and including income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payment (Borden et al. 1994). Locally, mining of coal from the TMRT area would help stabilize municipal, county, and state economies.

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Existing infrastructure in Sweetwater County (e.g., housing, utilities, schools, hospitals, etc.) would be adequate to accommodate the limited additional temporary construction and permanent mining jobs created by Proposed Action.

Direct impacts to soils would include the removal of vegetation, exposure of the soil, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. These impacts may, in turn, result in increased runoff, erosion, and sedimentation to the any receiving water system. Short-term control of surface runoff and sedimentation would be accomplished by implementation of alternate sediment control measures required by the WDEQ/LQD and described in the mine plan portion of the Proposed Action.

Federally listed TEC&P species with the potential to occur in the project area are black-footed ferret and bald eagle and no impacts are expected.

All BLM-sensitive species likely to occur within the TMRT and vicinity have been identified. BLM-sensitive species documented in or in the vicinity of the TMRT include white-tailed prairie dog, white-faced ibis, ferruginous hawk, greater sage-grouse, long-billed curlew, burrowing owl, sage thrasher, loggerhead shrike, Brewer's sparrow, mountain plover, northern leopard frog, Great Basin spadefoot, Nelson's milkvetch, and mystery wormwood (WNDD 2003). Most of the BLM-sensitive species likely to occur within the TMRT are mobile enough that they would likely not be affected by the Proposed Action.

While it may be possible that individual white-tailed prairie dogs or burrowing owls that live in areas directly affected by mine-related subsidence may be adversely affected by the Proposed Action, the impacts would be limited to few individuals and would not have an adverse impact on their populations. In addition, the project area would not contribute to the need to list additional species under the provisions of the federal *Endangered Species Act*.

Direct impacts to vegetation due to the Proposed Action include the removal of existing vegetation community from the disturbed area. In turn, vegetation removal would result in increased runoff, erosion, and sedimentation to the any receiving water systems. Short-term control of surface runoff would be accomplished by implementation of alternate sediment control

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measures required by the WDEQ/LQD and described in the mine and reclamation plan of the Proposed Action. In addition, long-term control of surface runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action.

As part of the WDEQ/LQD permit to mine, BCC would be responsible for the development of mine subsidence and reclamation plans that would include detailed information concerning the amount of anticipated subsidence, mitigation measures to prevent or minimize the impacts of subsidence, mitigation measures to prevent, lessen, or mitigate material damage or loss of value of physical property in the area, a subsidence monitoring and mitigation plan, and a reclamation plan to address reclamation and revegetation requirements on affected areas. Following the completion of reclamation operations, the revegetated areas would be monitored at least annually for five years by BCC and WDEQ/LQD to assess the subsidence and the adequacy or need for additional reclamation and revegetation efforts. Subsidence and erosional features would be monitored and appropriate corrective actions instituted if conditions warrant. Additional erosion control features would be employed as needed and as directed by WDEQ/LQD. All mitigation and corrective actions would be conducted in accordance with the approved WDEQ/LQD mine permit.

Solid waste such as garbage and other discarded solid materials would be collected at a designated collection site and disposed of at an approved solid waste management facility. Solid waste would not be imported or disposed of within the TMRT area. Spills of petroleum products may occur during mining due to periodic equipment maintenance and/or accidents. Petroleum-contaminated soils would be disposed of in an approved facility capable of accepting such waste. All nonhazardous material would be disposed of in accordance with appropriate local, state, and federal regulations.

Direct impacts to surface water resources would include an increase in runoff, wind and water erosion, and sedimentation to the any receiving system as a result of surface disturbance, removal of vegetation, exposure of the soil to the elements, and soil compaction. Ephemeral channels may also be impacted as a result of subsidence that may cause limited head-cutting or ponding within affected channels. Short-term control of surface runoff would be accomplished

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by implementation of alternate sediment control measures required by the WDEQ/LQD and described in the mine plan portion of the Proposed Action. However, there would be no temporary or permanent depletion of surface water resources. In addition, long-term control of surface runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action. Reclamation and revegetation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the life of the project.

No perennial streams would be directly impacted by the underground mining activities, and there would be no depletion of surface water resources. Therefore, no additional mitigation measures beyond those already included in the Proposed Action would be required.

Under the Proposed Action, BCC would require approximately 100,000 to 500,000 gallons of water per day from the Deadman coal zone for dust suppression and equipment washdown and at the surface support facilities. In addition, approximately 5,915 acres of coal aquifer (the same one that would be mined) would be temporarily removed during mining.

Drawdown of the coal aquifer would occur throughout the life of the mine and would likely mimic groundwater drawdown patterns currently observed as a result of BCC's surface coal mining operation. The drawdown limit of the Deadman coal zone would likely continue to extend northwest of the existing surface mine operation. In addition, a limited amount of drawdown would also occur in the Lance Formation and Fort Union Formation overburden. The amount of drawdown would depend upon numerous hydrogeologic factors including the amount of hydraulic connectivity between the various formations. There are no known groundwater appropriations within the vicinity of the TMRT, except those currently held by BCC.

After mining operations have been completed, aquifers would begin to recharge, although the recharge rate would depend on the specific physical characteristics of the replaced aquifer (Deadman coal zone) and the indirectly impacted aquifers (the Fort Union Formation overburden and the Lance Formation). It may require 100 years or more for postmine groundwater levels to

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recharge to premine levels (BLM 2003b). Impacts due to aquifer drawdown would last for 100 years or more beyond the life of the mine; however, these impacts would not be permanent.

The closest surface expression of groundwater to the TMRT is at Radar Springs, approximately 1 mi northwest of the TMRT. However, based upon the slope of the coal beds that would be impacted by the Proposed Action and knowledge gained at the existing Jim Bridger Mine and local geologic maps, the proposed underground mine would be located down-gradient of Radar Springs and most likely is not connected to Radar Springs and would not impact Radar Springs.

There are no jurisdictional or nonjurisdictional wetlands within the TMRT. The Proposed Action would have no impacts on wetland resources, and permit coverage from the U.S. Army Corps of Engineers would not be required.

Direct impacts to wild horse populations would result from the temporary loss of 87 acres of habitat due to vegetation removal; displacement of wild horses due to disturbance by project-related activities; direct mortality due to construction-related activities; and an increased likelihood of vehicle/animal collisions due to increased vehicle traffic. Impacts to vegetation due to disturbance would be limited in part due to the fact that the 87 acres of disturbance would be spread over a larger area and would not occur in a single block of disturbance. In addition, the population of wild horses within the GDBWHMA is within the BLM management level for this area, and there would be no impacts to the local wild horse numbers.

Direct impacts to big game would result from the loss of habitat due to vegetation removal; displacement of wildlife due to disturbance by project-related activities; direct mortality due to construction-related activities; increased mortality due to poaching and harassment; and an increased likelihood of vehicle/animal collisions due to increased traffic in the area. Due to the depth of the mining operations, noise from the underground mining operations would be minimal; therefore, no big game would be expected to be displaced from within the TMRT due to noise.

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Approximately 1,726 acres or 30% of the TMRT area would be located within crucial winter/yearlong pronghorn antelope range. However, a majority of the TMRT area (70%) would be located in winter/yearlong habitat. Impacts to pronghorn antelope due to vegetation removal would be limited due in part to the fact that the 87 acres of project-related disturbance would occur in small amounts over a large area. In addition, only 30 acres of the disturbance would occur within crucial winter/yearlong range. Therefore, there would be no impacts to the population of pronghorn antelope within the Red Desert herd unit due to the Proposed Action.

The TMRT does not contain any crucial winter mule deer or elk range. Once construction activities and reclamation operations are completed and suitable vegetation habitat is re-established, mule deer and elk would likely reoccupy the ROWs and areas within the TMRT that are impacted by subsidence. Therefore, there would be no impacts to either mule deer or elk populations due to the Proposed Action.

Direct impacts to raptors include mortality due to electrocutions and collisions with powerline structures. It is unlikely that raptor populations would be impacted by the Proposed Action; however, individual birds may be impacted. Several raptor nests are located in the TMRT area; however, no raptor nests were documented within the ROW areas.

Direct impacts to greater sage-grouse and other upland game birds include loss of breeding and nesting habitat, wintering areas, and possibly strutting grounds (leks); displacement due to increased human activity; and collisions with vehicles and/or powerlines. Indirect impacts include the displacement due to noise, ground vibrations, and/or subsidence. The BLM requires special mitigation measures if greater sage-grouse leks are located within 0.25 mi of any proposed surface disturbance.

Only approximately 1% (59 acres) within the TMRT may be physically disturbed as a result of reclamation operations to repair cracks due to subsidence, and it is possible, but unlikely, that one or more of the three greater sage-grouse leks within the TMRT may be physically impacted by these operations. In order to minimize potential impacts to greater sage-grouse within the TMRT, reclamation operations would be conducted in accordance with standard BLM mitigation

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measures outlined in the EA and WDEQ/LQD requirements specified in the mine and reclamation permit application prepared by BCC. BLM, WDEQ/LQD, and WGFD would carefully evaluate the need for and extent of any surface-disturbing activity that would occur within 1 mi of any greater sage-grouse lek. Priority would be given to minimizing any physical disturbance to greater sage-grouse leks.

Due to the depth of underground mining operations (i.e., 200 ft to 1,000 ft below the surface) and the limited amount of blasting, noise and/or ground vibrations at the surface within the TMRT due to mining operations would be minimal compared to nearby surface coal mining operations. Subsidence would also occur within the longwall coal panel areas. However, there is no documented or anecdotal evidence of impacts of noise, ground vibration, or subsidence from underground mining operations on greater sage-grouse behavior.

### **Cumulative Impacts**

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts may result from individually minor, but collectively significant, actions occurring over a period of time (40 C.F.R. 1508.7). The boundary of individual CIAA areas for this EA are based on the specific resource being discussed and evaluated.

Cumulative impacts to all of the environmental resources evaluated in this EA would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

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